Chapter 1: Introduction/Background

Vision Statement

For thousands of years, the Mississippi River (River) corridor has served as an important migration route for millions of ducks, geese, shorebirds, waterbirds, songbirds, hawks, eagles and gulls. This network of wetlands, forests, and grasslands has also provided habitat for a variety of fish and resident wildlife species. The Upper Mississippi River (UMR) floodplain has been greatly altered for agriculture, urbanization, navigation and flood control. The quantity and quality of wildlife habitat on the River has declined. We believe that partnerships will play a key role in achieving the long-term ecological integrity of the UMR.

Photograph by Jim Rathert

American Bittern

Cooperative working relationships between federal and state agencies, industry, and the public are crucial to achieving a balance between commercial navigation, recreation, River habitat for wildlife and safe municipal water. Mark Twain National Wildlife Refuge Complex (Complex) lands will contribute to larger public policy goals regarding floodplain management. Research and monitoring data must be current, readily available, and applicable to land management decision-making needs. In the future, the Complex management program on 500 miles of the UMR will be an exemplary model for partnerships and science-based wildlife management.

The River will provide a mosaic of habitats to sustain healthy populations of native wildlife. Managed lands, such as those within the Complex, have become critical for the ecological sustainability of the UMR. A balanced program of habitat protection, enhancement, and restoration will consider overall habitat needs on the pool, reach, and watershed levels. The Complex will provide high-quality habitat along the UMR for migratory birds, other wildlife species, and fish. Management programs will be effectively monitored for success and adapted and modified as new scientific information becomes available.

While wildlife management remains the primary purpose of the Refuge Complex, compatible public use and enjoyment of those resources is also important. The Complex will provide an array of environmental and wildlife education programs and wildlife-dependent recreational activities. Habitat management programs and public use facilities will attract thousands of visitors annually. The partnership with the Army Corps of Engineers involving the Riverlands Project Area provides an opportunity for conducting a quality off-refuge wildlife education and interpretation program within a large metropolitan area. Local communities will appreciate the role of the Service in managing quality wildlife habitat and contributing to improved floodplain factors such as flood water storage and helping to provide for clean, safe water in the River corridor.

Manager's Note on the CCP

The following plan, along with appendices, is a large document because it covers five National Wildlife Refuges (Port Louisa NWR, Great River NWR, Clarence Canon NWR, Two Rivers NWR, and Middle Mississippi River NWR) and nearly 500 miles of Mississippi River corridor. The plan was written in a fashion that was intended to give the citizen reader enough common language information to understand the Fish and Wildlife Service role on the River. However, the primary purpose of the CCP is to be a guide for current and future refuge managers.

We would like to direct the reader's attention to several specific points or highlights within the overall plan:

- The planning process was undertaken at a landscape scale, including the 500-year floodplain through nearly 500 miles of the Upper Mississippi River and a portion of the lower Illinois River. The level of detail outlined for areas within the existing Refuge boundary is much greater than for strategies outside the boundary in the River corridor area. See section "Area of Ecological Concern" in this chapter for more information on the planning area.
- Due to expansion of the Refuge in the late 1990s and overuse of the name "Mark Twain," the Refuge was reorganized into several separate refuges within a Complex. See the section in this chapter called "Organizational Change in Stations Within Mark Twain Complex." This plan includes all five resulting refuges.
- As a landscape-scale plan, albeit a long and relatively narrow corridor, goals were developed for habitats to meet wildlife needs, but no wildlife goals themselves are present. Wildlife populations are dependent on too many factors outside the Refuge planning area to be "controlled" enough for good objectives and strategies.
- Some of the desired future conditions outlined for the end of the planning period reflect program adjustments that occurred since the Flood of 1993. As the first comprehensive conservation plan since the "flood era," several rehabilitative actions have never been put into an overall planning context. Actions such as the spillway construction at Clarence Cannon NWR underwent National Environmental Policy Act (NEPA) evaluation, but the effects of the overall Refuge Complex program had not been evaluated as a whole to address floodplain functions, connectivity or flood-friendly facilities. The Environmental Assessment associated with this plan focuses on the implication of these broad factors and future outcomes.
- The plan includes a new 27,659-acre boundary expansion proposal. For the 10 years prior to this effort there were various evaluations conducted on resource needs along the Mark Twain reach of the River. This document pulls together the purpose and need for land protection and rehabilitation in the historic floodplain to address deteriorating habitat conditions and is consistent with other federal policies and management goals for the River. The boundary addition represents a strategy to meet identified needs. See Chapter 5 for more information on the proposed boundary expansion.

This plan has been prepared by the refuge staff at the field level. The process involved a considerable amount of coordination with the public and with the States of Illinois, Iowa and Missouri, the Corps of Engineers and the U.S. Geological Survey. It is our intent to constantly gain more and better information which will help us refine the strategies contained herein, and to fuel adaptive management adjustments.

Refuge System Mission

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans[1].

National Wildlife Refuge System Goals

- Fullfill our statutory duty to achieve refuge purpose(s) and further the System mission.
- Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.
- Perpetuate the migratory bird, interjurisdictional fish, and marine mammal populations.
- Conserve a diversity of fish, wildlife and plants.
- Conserve and restore, where appropriate, representative ecosystems of the United States, including the ecological processes characteristic of those ecosystems.
- Foster an understanding and instill appreciation of fish, wildlife, and plants, and their conservation, by providing the public with safe, high-quality, and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

Mark Twain Refuge Complex Goals[2]

Wetlands and Aquatic Habitat:	Restore, enhance, and manage refuge wetland and aquatic areas to provide quality diverse habitat for waterfowl, shorebirds, big river fish, and other wetland-dependent species.
Forest Habitat:	Conserve and enhance floodplain forest to meet the needs of migrating and nesting neotropical birds and other forest-dependent wildlife.

[1] National Wildlife Refuge Improvement Act of 1997, Section 4(2)
[2] Details provided in Section "Refuge Goals, Objectives and Strategies."

Other Terrestrial Habitats:	Protect, enhance, and restore other terrestrial habitats to benefit grassland birds, waterfowl, and neotropical migrants.
Sedimentation and Water Quality:	Identify and reduce the impacts of sedimentation and other water quality factors, such as contaminants, on fish and wildlife resources.
Floodplain Management:	Enhance floodplain functions and where practicable mimic historical water level fluctuations in the River corridor.
Public Use and Education:	Provide wildlife-dependent recreation and education opportunities where appropriate, and improve the quality and safety of the visitor experience.
Monitoring:	Develop and implement a wildlife, habitat, and public use monitoring program, integrated with interagency efforts along the River corridor, to evaluate the effectiveness of refuge management programs and to provide information for adaptive management strategies.

Mark Twain NWR Complex File Photo

Area of Ecological Concern[3]

The lands and waters of the Mark Twain Refuge Complex (Complex) contain valuable and important habitat areas along the lower half of the Upper Mississippi River System (UMRS). The UMRS includes the Upper Mississippi River and navigable tributaries, including the Illinois River but excluding the Missouri River. While the entire river corridor is important, particularly to the health and recruitment of aquatic species, habitat values change along each river mile. Locations where habitat diversity, quantity and quality are currently the highest are considered core areas for long-term attention. However, due to some of the problems identified in this plan, such as sedimentation, the entire UMRS riverine habitat condition has been in decline. As an integral part of the system, the Refuge needs an organized approach to consider how it fits and contributes to these larger river values, as well as identifying the best opportunities for reversing habitat declines outside current refuge boundaries.

This planning activity on the Mississippi River started as a watershed perspective effort, however, the resulting "planning area" would have included a good

[3] An Area of Ecological Concern can be defined as: "An essentially complete ecosystem (or set of interrelated ecosystems) of which one part cannot be discussed without considering the remainder." [Malheur, National Wildlife Refuge Master Plan and Environmental Assessment, 1985, p. 7] This definition was later used to develop the "planning area" for the 1994 Lower Colorado River Refuge Complex Comprehensive Conservation Plan.

portion of the continent. While it is helpful to consider all the cause/effect actions within the entire watershed, such as farming practices and development that accelerates runoff, this macro scale view is clearly beyond the management capability of the Refuge staff. A more manageable approach was to outline the 500-year floodplain between the Quad Cities (Illinois/Iowa border) and the confluence of the Ohio River (River Mile, or RM, 493 to RM 0). This area covers about 1.6 million acres.

The floodplain area was further modified, as appropriate, to accommodate the practical limits of Refuge Complex habitat concerns. For instance, highly developed areas such as towns are obviously not the most suitable locations for riverine habitat restoration and were excluded from further consideration. A revised map to reflect such changes was created and defined an Area of Ecological Concern (AEC) for refuge planning purposes. The AEC totals nearly 1,400,000 acres and extends from RM 493 at Lock and Dam 15 to RM 0 on the Illinois side. In Illinois where the Shawnee National Forest area borders the River, only aquatic and River border habitats have been evaluated for potential restoration in this plan. The remaining 500-year floodplain between Grand Tower and the Thebes area falls within a Forest Service study area for the Shawnee National Forest. The major adjustment on the Iowa/Missouri side of the River was located at the last 30 miles on the Missouri side where the floodplain extends a long distance inland from the River. The AEC relates to the practical limits of the Complex's evaluation of floodplain areas for possible restoration activities, including potential land acquisition. However all land types and uses are being monitored by other programs within the 500-year floodplain to the Ohio River to track present River status and trends compared to past resource values. The Habitat Needs Assessment (HNA), and the Long Term Resource Monitoring Program (LTRMP) are Corps of Engineers funded efforts to monitor the environmental conditions of the UMRS. Each of these efforts address the historic 500-year floodplain of the River.[4]

Need for Action/Planning Perspectives

This Comprehensive Conservation Plan (CCP) is intended to outline how the Complex will fulfill its legal purposes and contribute to the National Wildlife Refuge System's wildlife, habitat and public use goals. The plan articulates management goals for the next 15 years and specifies the objectives and strategies for each unit of the Complex that will help achieve those goals. While the planned future condition is 15 years out, or 2016, the Complex anticipates plan updates every three to five years due to the volume of information available through the LTRMP monitoring program. Monitoring data will be used to implement adaptive management strategies, which will be documented in future plan revisions. Development of this CCP has been guided by legislative mandates contained in the National Wildlife Refuge System Improvement Act of 1997. These mandates include:

- Wildlife has first priority in the management and uses of refuges.
- Wildlife-dependent recreation activities including hunting, fishing, wildlife observation, wildlife photography, environmental (wildlife and habitat) education and interpretation are priority public uses of the

[4] See Monitoring Goal Section for further information on these programs.

Refuge System. These uses will be facilitated when they do not interfere with the Refuge's ability to fulfill its purposes or the mission of the Refuge System.

- Other uses of the refuges will only be allowed when they are determined to be appropriate and compatible with the refuge purposes and the mission of the Refuge System.

Due to the scope and scale of the planning area and the variable nature of River conditions that affect the use patterns of the migratory species using the Mississippi River flyway, a decision was made to concentrate future management actions on habitat conditions rather than wildlife abundance. Since the Refuge cannot control many of the factors relating to wildlife populations, there are no specific wildlife goals included in this CCP. This approach was reinforced by the U.S. Geological Survey, (Schroeder et al., 1998) in addressing the manner in which habitat management strategies should be selected on refuges:

> "The presence of high quality habitat is a necessary prerequisite for, but does not guarantee, an abundant wildlife population. Inadequate habitat, however, will cause wildlife to be absent or less abundant. Because wildlife populations are affected by factors other than habitat, a logical goal of habitat management is to focus on the habitat conditions required to provide the greatest potential for the species or resources of concern. To the extent that limiting factors other than habitat can also be successfully managed, the greater the likelihood that the species or resource will actually reach the limits imposed by the habitat."

This CCP replaces the Mark Twain National Wildlife Refuge Master Plan, which was completed in 1979. In that plan, habitat was not presented directly in goals or objectives but was included as the means of getting to the detailed wildlife objectives. Implementation of the plan was measured by resulting wildlife population levels in terms of "use days." However, animal populations on-refuge may be influenced by weather, disease or other off-refuge habitat conditions. If populations do change, it is impossible to prove a causal link to specific refuge management actions, which also precludes practicing adaptive management based on those results. By pursuing habitat goal based planning, the Complex can focus on manipulating habitat components and creating a direct link between those actions and responses on the ground. Due to the variable habitat conditions inherent in the UMR floodplain, these refuges will also need to employ adaptive management strategies to adjust to droughts, floods, invasive species and other major influences. It should be noted that these conditions are so dynamic and unpredictable that habitat strategies, particularly those for various wetland types, have been developed which reflect "target" conditions for at least 3 out of every 5 years. The plan is designed to make the best of the variable conditions the River gives each year.

Although the CCP is habitat based, Complex lands and waters are managed for wildlife. Decisions had to be made first about which wildlife species, guilds or groups to consider in determining which habitats to promote. To help focus this decision process and to ensure that a broad array of wildlife needs were considered (wildlife and habitat diversity) on the appropriate landscape scale, a "Species Priority List" was generated for the Mark Twain National Wildlife Refuge Complex. These species were selected by "funneling down" the Fish and Wildlife Service Resource Priorities List for Region 3, which was developed in 1998. This list was first narrowed to all those priority species found within the UMR

ecosystem, then to those found within the planning area, or AEC. The resulting list was further modified by considering Refuge purposes, the species, historic range, habitat types found within the AEC and whether there were major voids or duplications. These species are essentially "indicators" with associations to AEC habitats upon which the Refuge Complex can relate the effect of CCP habitat goals, objectives and strategies on wildlife. The Refuges within the Complex are not managing exclusively "for" these species. This planning process studiously avoided any single-species management directions. Species on the Priority List can be considered representatives of guilds or other groupings of species that are dependent on a particular type of habitat. For that reason they provide an identifiable link between a wildlife species and its associated habitat managed by the Complex. Establishing these associations during the planning process will help in future monitoring activities and adaptive management decisions. Most of the identified fish and wildlife concerns are reflected in the habitat goal section of this plan. However, the floodplain management and water quality goals also relate directly to desired outcomes for wildlife, and fisheries in particular.

The Complex Species Priority List contains one mammal, 15 birds, two fish and one mussel guild, including the following species:

Mammals
Indiana bat

Birds
American Bittern *(Botaurus lentiginosus)*
Canada Goose *(Branta canadensis)*
Wood Duck *(Aix sponsa)*
Mallard *(Anas platyrhynchos)*
Blue-winged Teal *(Anas discors)*
Canvasback *(Aythya valisneria)*
Lesser Scaup *(Aythya affinis)*
Bald Eagle *(Haliaeetus leucocephalus)*
Red-shouldered Hawk *(Buteo lineatus)*
Least Tern - interior population *(Sterna antillarum athalassos)*
Cerulean Warbler *(Dendroica cerulea)*
Grasshopper Sparrow *(Ammodramus savannarum)*
Henslow's Sparrow *(Ammodramus henslowii)*
Short-billed Dowitcher *(Limnodromus griseus)*
Yellow-billed Cuckoo *(Coccyzus americanus)*

Fish
Pallid Sturgeon *(Scaphirynchus albus)*
Paddlefish *(Polydon spathula)*

Mussels
Sheepnose *(Plethobasus cyphyus)*
Salamander Mussel *(Simpsonaias ambigua)*
Round Pigtoe *(Pleurobema coccineum)*
Rock Pocketbook *(Arcidens confragosus)*
Pistolgrip *(Tritigonia verrucosa)*
Monkeyface *(Quadrula metanevra)*
Higgins' Eye *(Lampsilis higginsi)*
Fat Pocketbook *(Potamilus capax)*
Black Sandshell *(Ligumia recta)*

During plan implementation the Complex will continue to track the status of all Regional Resource Priority species within the AEC and, to the degree practicable, all species utilizing the River corridor. Appendix B contains a list of species found in the AEC, including their habitat preferences and any State or Federal listing information. The Complex will modify these lists and plan strategies as needed through an adaptive management process.

Organizational Change in Stations within Mark Twain Complex

Mark Twain National Wildlife Refuge was established in 1958 from lands originally purchased by the COE for construction of the Mississippi River 9-foot navigation channel project. The headquarters was located in Quincy, Illinois, with district offices in Annada, Missouri; Brussels, Illinois; and Wapello, Iowa. These three District field offices were originally one-person sub-stations organized to conduct the habitat and survey work locally due to the distance of these units from Quincy. For years, the Quincy Headquarters was run as the "command and control" center, making habitat and budget management decisions for the whole Refuge. Over the years additional Refuge lands were acquired. Part-time administrative staff were added to the Districts and each station started to manage its own budget. During this time, Maintenance and Assistant Manager positions were added to meet the growing responsibilities. Eventually, administrative positions were made full-time and the Districts operated as separate refuge field offices for most day-to-day issues. Today, the role of the headquarters is no longer one of directing the habitat management decisions at each unit. It is now focused on Service involvement and responsibilities on fish and wildlife issues within the entire lower half of the UMR. Within this charge, the highest priority is facilitating management of the core habitats in the National Wildlife Refuge System, including the nearly 50,000 acres of General Plan land outgranted to the states of Illinois, Iowa and Missouri through Cooperative Agreements. Districts still coordinate management efforts with the headquarters to ensure a consistent Service approach in addressing River resources, policy implementation and continuity with interagency partners.

From the Great Flood of 1993 through this plan process a large amount of Refuge headquarters time was devoted to land acquisition issues and the subsequent management direction of new units. Areas on the open River section between St. Louis and the mouth of the Ohio River, referred to as the "Middle Miss," were added as un-staffed divisions of the Refuge in 1996-97. The distance from Quincy to these purchased areas compounded the logistical difficulties that existed in a large, sprawling, single refuge. Since considerable interest remains for Refuge expansion along the River, particularly among the three border state conservation departments, floodplain farmers and non-governmental organizations, the work load was destined to grow in that distant part of the Refuge.

In addition to the logistical difficulties resulting from the distance of Refuge units, another organizational problem was identified in the planning process. There has been a considerable issue involving Refuge name recognition in the planning area. Samuel Clemens, pen name Mark Twain, brought national recognition to the Mississippi River with his entertaining and colorful stories. The Refuge was named with an intention to capture the existing public recognition of Mark Twain and the association with the Mississippi River. However, it has become apparent that there is also public confusion about the Refuge due to its namesake. "Mark Twain" is now overused in the area. Other facilities include:

Figure 1: Mark Twain NWR Complex Organization

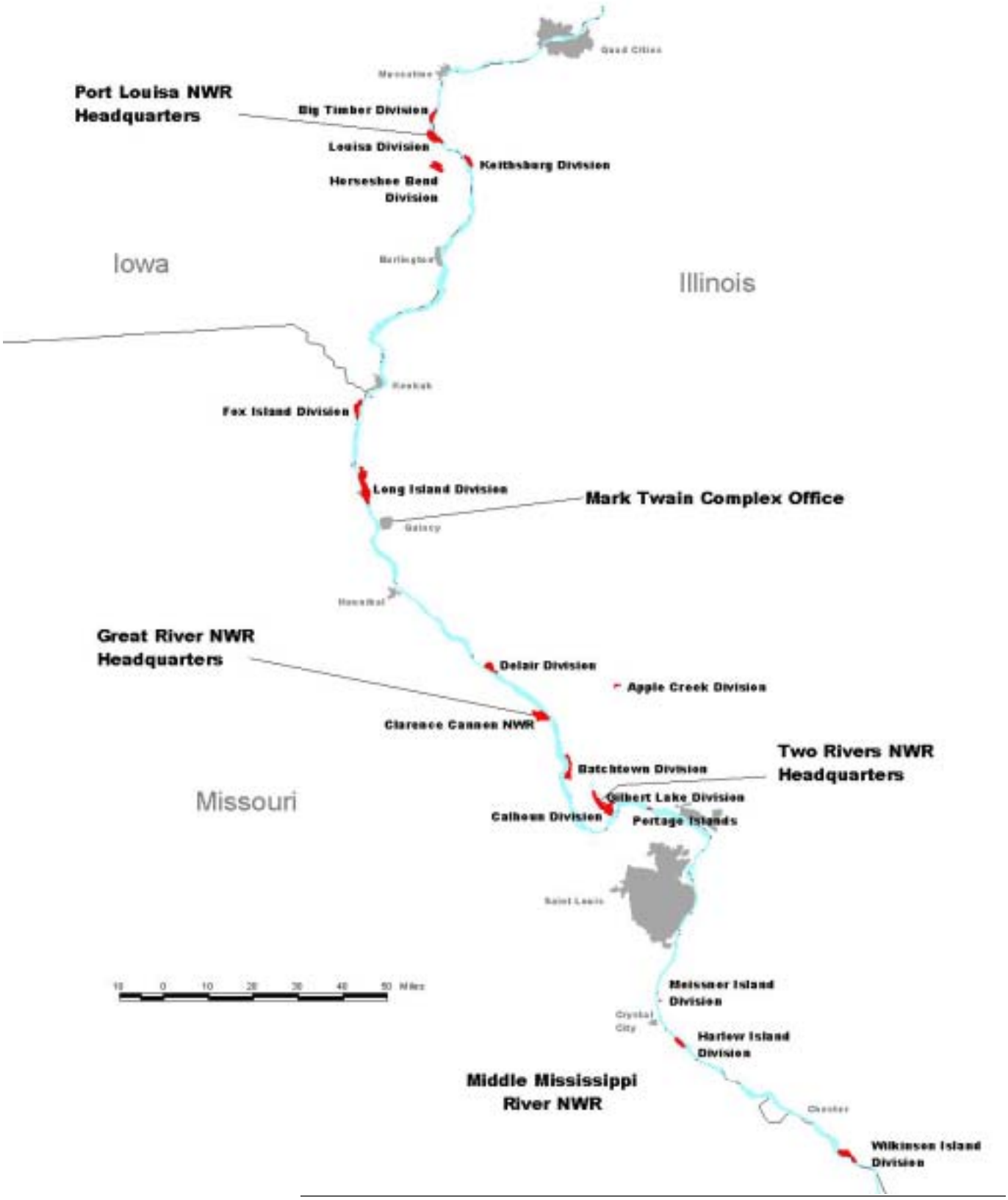

Table 1: Changes in Organizational Structure

Past Organizational Structure	Current
Mark Twain NWR Headquarters	
Wapello District	Port Louisa NWR
Annada District/Clarence Cannon NWR	Great River NWR/Clarence Cannon NWR
Brussels District	Two Rivers NWR
New Divisions south of St. Louis	Middle Mississippi NWR

the Corps of Engineers' large and popular Mark Twain Lake, the Mark Twain National Forest, caves, banks, buildings, a bridge, a casino and numerous other landmarks utilizing the name. This has understandably resulted in confusion about what and where the Refuge is, particularly since its units are scattered over such a large area. The Refuge staff has found that local citizens, politicians and partner agencies get confused about the identity and organizational structure of the Refuge.

To address these issues, a solution was proposed and implemented, and is documented in this CCP. The Service converted each of the three Mark Twain Refuge Districts into separate refuges with separate names. An additional refuge was established on the Middle Mississippi River. The restructuring is intended to assist the public in identifying the local refuge places they relate to and enjoy. The Service will maintain overall program continuity, with a watershed and ecosystem perspective, through a Refuge Complex Office located at Quincy.

The changes listed in Table 1 were approved by the Director of the U.S. Fish and Wildlife Service on May 31, 2000. Another proposal was made regarding the Clarence Cannon NWR[5], which was approved to pursue. Clarence Cannon NWR has been managed as a unit of the Annada District of Mark Twain and it was suggested that the name of the Congressman be retained with the unit, as the Clarence Cannon Division of the Great River NWR, rather than as a separate refuge. However this change could not be approved solely by the Director and will require the approval of the Migratory Bird Conservation Commission. This approval will be requested from the Commission following the completion of this planning effort. All other approved changes, as noted in Table 1, have been incorporated into this document.

The Complex also includes the Iowa River Corridor Project (IRCP), which includes nearly 10,000 acres of Service fee title lands located along the Iowa River between Amana and Tama in Iowa. This project was born out of the Great Flood of 1993 when the corridor area was covered with floodwater for 5 months. Prior to this event the Iowa River Valley had experienced at least one flood in 28 of the previous 30 years. This chronic problem, along with associated public and private expenditures to deal with it, brought together a partnership of Federal, state, local and private interests to explore alternatives. This partnership has resulted in the Department of Agriculture Natural Resources Conservation Service (NRCS) purchasing over 13,000 acres of Emergency Wetland Reserve Program easements to reduce agriculture losses in the floodplain, along with the

[5] In 1963, the Migratory Bird Conservation Commission approved the purchase of lands for the Annada Division. The Commission added lands to the Division on June 24, 1964. At that same meeting it was suggested that the Annada Division be named in honor of Congressman Clarence Cannon, whcih was approved at the August 10, 1964 MBCC meeting.

Service picking up the residual fee title value for much of that area. Service involvement was key to success since most landowners were not willing to pay for general maintenance, restoration upkeep and property taxes for land that would provide little income. The Iowa Department of Natural Resources (DNR) already had a presence on the corridor and an expressed interest in its role there. This resulted in the development of a cooperative agreement between the Service and the state for shared management responsibilities for the project, with the primary day-to-day management role given to the Iowa DNR. The IRCP has been placed administratively under the Port Louisa NWR, but it is outside the AEC and is not included in this planning effort. Future planning efforts on the corridor will be a collaborative effort with the Iowa DNR and NRCS.

The 270-acre Apple Creek Division is a former Farmers Home Administration property that was transferred to the Service and is also outside the AEC. This unit has been managed in the same manner as conservation easements (See Refuge Management Considerations-Management of Lands Associated with Agriculture Department section). Any further plans for the area will be included in tiered documents such as a Habitat Management Plan for Two Rivers NWR.

Legal, Policy and Administrative Guidelines

Legal Mandates (including FWCA, Refuge Improvement Act)

See Appendix H, Guiding Laws and Orders

Relationship to Other Plans

The Mark Twain Complex staff work closely with the U.S. Army Corps of Engineers, other Federal and State agencies and other Service programs in developing or consulting on a variety of plans and initiatives. The following paragraphs describe some of the plans pertaining to the Refuge Complex.

Migratory Bird Conservation Initiatives

Several ongoing migratory bird conservation initiatives are relevant to this planning effort. The North American Waterfowl Management Plan (NAWMP) is a partnership effort to restore waterfowl populations to historic levels; it was developed in 1986, with objectives and strategies evolving through NAWMP Updates (the latest produced in 1998). Refuges found within NAWMP Joint Ventures should strive to achieve waterfowl objectives outlined in the pertinent Joint Venture Implementation Plan. The Mark Twain NWR Complex lies within the Upper Mississippi River and Great Lakes Region Joint Venture area.[6]

Several nongame bird initiatives are in the planning stage, with implementation beginning in the near future. Partners In Flight (PIF) is developing Bird Conservation Plans, primarily for landbirds, in numerous physiographic areas; these plans include priority species lists, associated habitats, and management strategies. The same elements will be by-products of ongoing planning efforts for

[6] Additional NAWMP information is found at: http://www.fws.gov/r9nawwo/nawmphp.html

shorebirds (U.S. Shorebird Conservation Plan) and colonial waterbirds (North American Colonial Waterbird Conservation Plan). The Mark Twain NWR Complex lies primarily within PIF Physiographic Areas 31, and the Prairie Peninsula, 32, the Dissected Till Plains. Small portions of PIF Areas 19, the Ozark - Ouachita Plateau, and 14, Interior Low Plateaus, also abut our AEC.[7] The American Bird Conservancy has included Mark Twain refuges and surrounding river reach in it's Important Bird Areas program.

The U.S. Shorebird Conservation Plan (USSCP) and the North American Colonial Waterbird Conservation Plan (NACWP) have identified priority species and conservation strategies, mostly focused around habitat, that will address the needs of those groups of birds. The Mark Twain NWR Complex lies primarily within Shorebird Planning Regions 22 (Eastern Tallgrass Prairie) and also 24 (Central Hardwoods).[8]

The North American Bird Conservation Initiative (NABCI) is a continental endeavor to improve all habitats for all birds through a united effort of individual programs and agencies. The previously mentioned initiatives (PIF, NAWMP, USSCP, and NACWP) have joined together to work more efficiently and effectively to achieve their mission. Migratory bird initiatives will operate under common Bird Conservation Regions, major ecologically based geographic units covering the entire continent. In the U.S., the vision is to restore, protect and enhance populations and habitats of North American birds. This is to be accomplished through coordinated efforts at international, regional, state and local levels, and supported by sound science and effective management.[9]

Upper Mississippi River/Tallgrass Prairie Ecosystem Team

The Complex lies within the Service's Upper Mississippi River/Tallgrass Prairie (UMR/TGP) Ecosystem. Members of the ecosystem team are comprised of representatives from each of the Service's offices including Ecological Services, Fisheries, Federal Aid, Private Lands, Law Enforcement and Refuges. The vision for the UMR/TGP Ecosystem team is to perpetuate the ecological integrity of the UMR/TGP Ecosystem through the protection, restoration, and enhancement of the Ecosystem's function, structure, and species composition by full implementation of the Service's mandates.

An Action Plan was developed by team members defining six ecotypes as the focus areas for this ecosystem: prairie wetland and associated habitats; oak savanna and forest lands; the Driftless Area; streams, riparian woodland corridors, and associated habitats; and the mainstem Mississippi River corridor. Five goals were developed in the plan, with associated objectives and strategies.

7 Species priorities for these areas can be found on the following website: http://cbobirds.org/pif/physios/index.html

8 The U.S. Shorebird Conservation Plan website is http://www.manomet.org/USSCP.htm. The website for the North American Colonial Waterbird Conservation Plan is: http://www.nacwcp.org

9 The NABCI website is www.crossdraw.com/cec/about_frame.htm

Upper Mississippi River Conservation Committee

"A River That Works and A Working River – A Strategy for the natural resources of the Upper Mississippi River System," was prepared by the Upper Mississippi River Conservation Committee (UMRCC). Led by the five Upper Mississippi River System states, this process consolidated the input of state, federal and non-governmental organizations for a conceptual plan of action. It includes a description of the significance of the River's natural resources; describes a set of objectives to maintain those resources; describes the physical River processes that support those resource values; and, outlines an overall strategy using nine tools and associated measures to restore natural river processes. The document also recommends implementation and leadership roles for agencies, organizations and individuals, including the national wildlife refuges managed by the Service on the River. The five main issues addressed are:

- Levee construction and the subsequent loss of over 50 percent of the historic floodplain.
- Construction and operation of the locks and dams have converted most of the free-flowing River into a series of pools, or reservoirs.
- The River has been channelized and maintained for navigation.
- Changes in land use and land practices have degraded water quality and increased sediment and nutrient problems in the River and the Gulf of Mexico.
- By connecting Lake Michigan to the Illinois River, we crated a pathway for non-native species in both directions.

The nine objective areas identified are:

- Improve water quality for all uses.
- Reduction in erosion and sedimentation impacts.
- Return of natural floodplain to allow channel meanders and habitat diversity.
- Provide for seasonal flood pulse effect and periodic low flows to improve nutrient base, plant growth and succession.
- Enable connectivity of backwaters to main channel.
- Provide for opening of side channels, create islands, shoal and sandbar habitat.
- Manage channel maintenance and disposal to support ecosystem objectives.
- Sever the pathway for exotics into and spread within the Upper Mississippi River System.
- Provide native fish passages at dams.

This effort was prepared during the same period as the first half of the Complex's comprehensive conservation planning process, and was published in 2000. Since its release, the document has been used by a number of agencies and organizations to plan their partnership role on the River. The Mark Twain Complex draft comprehensive conservation plan is consistent with the interagency concept plan and contributes to most of the referenced objectives.

Army Corps of Engineers St. Louis District Master Plan

The St. Louis District, U.S. Army COE of Engineers, is currently developing a Rivers Project Master Plan for the management of the natural, cultural and recreation resources on federal lands and waters associated with Mississippi River Navigation Pools 24, 25, and 26 (including the lower 80 miles of the Illinois River), Pool 27, the Kaskaskia River Navigation Project and applicable portions of the Mississippi River from St. Louis to the Ohio River confluence. The primary objective of the Master Plan is to publish a clear, practical, and balanced plan that will guide future COE land use decisions and public use development actions on the St. Louis District's portion of the UMRS. The overall goal of the document is to provide a guide for effective management of the federal lands, natural and constructed resources, while preserving habitats, accommodating public recreational demands and insuring continued river navigation.

Several issues relevant to the management of the Mark Twain Complex and partner states managing COE owned General Plan lands are included in the draft Master Plan, including several boundary adjustments between the State of Illinois and the Two Rivers NWR. At this writing the COE plan has not yet been finalized or approved. However this document has incorporated those tentative changes in throughout the CCP as a desire future condition.

Army Corps of Engineers – Rock Island District Land Use Allocation Plan

The Land Use Allocation Plan (LUAP) established the land resource management policies, objectives and uses for federal lands under the jurisdiction of the Rock Island District within the Upper Mississippi River Navigation System. The Rock Island District encompasses Pools 11-22. Management guidelines are in accordance with Federal regulations and programs concerning natural resource practices, and are directed toward optimum use of such resources in the overall interests of the general public and the nation. Objectives considered in plan development included navigation, recreation, fish and wildlife, forestry, cultural, environmental, and floodplain management. The LUAP is part of the project's comprehensive Recreation-Resource Master Plan documentation. A significant feature of the LUAP is the Shoreline Management Plan, which establishes the Rock Island District's administrative policy concerning private, exclusive use permitted on project-owned lands and waters.

Public involvement during the comprehensive conservation planning process raised the issue of barge fleeting on government owned lands. Currently there are no fleeting sites attached to the Refuge Complex or at General Plan lands within the St. Louis District. However, there are several locations in Rock Island District where "casual mooring" of barges has occurred at the same locations for many consecutive years and have essentially become permanent uses.

As part of this planning process, the Complex and the COE began discussions regarding the problem of tree, riverbank and near shore habitat damage as a result of these activities. The Service will continue working with the COE and the navigation industry to devise a better method for barge storage than that which now occurs on public lands. Complex adaptive management strategies to

address this issue, and public concerns about it, will be developed in collaboration with the COE. One forum in which this topic will be addressed in the newly established annual coordination meeting between all the General Plan land managing agencies, which is now mandated by the revised Cooperative Agreement for General Plan lands. In general, the Service supports the move of fleeted barges to off-shore site that are located through a consideration of navigation system needs, proximity to loading terminals, environmental resources and public recreation.

Army Corps of Engineers Operational Management Plans (OMP)

The COE "Environmental Stewardship Operations and Maintenance Policies" guidance (ER-1130-2-540, 15 November, 1995) establishes policy for administration and management of natural resource activities at COE civil works water resource projects. "Policy and Planning: Planning Guidance", (ER-1105-2-100, 28 December, 1990) describes the types of Army civil works planning programs and studies, the various purposes served by the water resource projects and principle guidance for the formulation and evaluation of water resource plans. As mentioned previously, the St. Louis District has an updated Master Plan, however the Rock Island District does not currently have a contemporary Master Plan for project lands. Operational Management Plans (OMP) detail objectives and strategies to implement programs within the Environmental Stewardship, Recreation and Flood Damage Reduction areas conceptually addressed in Master Plans. Rock Island District staff have continued to update OMPs to provide effective guidance to daily operations. The long-term goal of the District, included in its OMP, is to manage project lands to provide a continuing public benefit from natural resources by perpetuating a diversity of ecological communities that are suitable for a variety of public purposes. Forest management objectives on refuge lands are directed whenever possible to improve timber quality for wildlife habitat. The St. Louis District will be developing several OMPs, as step-down plans from the Master Plan during the next several years. In an effort to maintain consistency between agencies in the these documents, Refuge Complex staff have consulted with COE foresters in the development of goals, objectives and strategies for this CCP on the management of GP lands regarding forestry, recreation and other stewardship issues.

Other Plans / Studies Relevant to This Document

Upper Mississippi River Summit

In 1998, an Upper Mississippi River Summit sponsored by the COE was held that attracted a variety of Federal, State and many non-governmental organizations, to discuss their visions of the Upper Mississippi River. The objective of this Summit meeting was to seek commitment to develop a multi-interest strategy for managing the River. The group's vision is to seek long-term compatibility of the economic use and ecological integrity of the Upper Mississippi River. The group committed to several key issues including:

- Identifying and prioritizing issue and geographic areas in which cooperative action is most likely;
- Seeking ways to remove obstacles to cooperative action within existing programs and authorities;
- Seeking funds and/or new authorities, as appropriate for the following:

    a) Continue enhanced environmental pool management in navigation pools.

b) Operations and maintenance activities that enable increased environmental benefits while maintaining a safe and dependable navigation system;

c) An evaluation of the current and future physical structure of the River floodplain under current management practices and the development of models to achieve a greater understanding of the economic and ecological interrelationships of management alternatives;

d) Restore 60,000 acres of floodplain habitat by making the UMR floodplain a high priority for federal conservation easements. In addition, coordinate federal, state, local and non-profit programs to acquire fee title from willing sellers for conservation purposes, and work with landowners to protect and restore private lands within the floodplain by increasing funding for conservation programs like Partners for Fish and Wildlife and the Wildlife Habitat Incentives Program;

e) Support the U.S. Fish and Wildlife Service, as part of the revision of refuge Comprehensive Conservation Plans in evaluating expanded refuge boundaries to acquire land from willing sellers in the UMR floodplain;

f) Improved operation and maintenance for the Mark Twain National Wildlife Refuge Complex and the Upper Mississippi River National Wildlife and Fish Refuge.

Report of the Interagency Floodplain Management Review Committee to the Administration Floodplain Management Task Force (The "Galloway Report")

The Interagency Floodplain Management Review Committee proposed a blueprint for "a better way to manage the nation's floodplains." This comprehensive review contained many recommendations, several of which were relevant to this plan, including:

- To provide integrated, hydrologic, hydraulic, and ecosystem management of the Upper Mississippi River basin.....(5) Charge the Department of the Interior with conducting an ecosystems needs analysis of the UMR basin. This action has been partially completed through the first Habitat Needs Assessment (HNA) (see below)

  During the 1993 flood, environmental easement and land acquisition programs became tools in assisting recovery and in removing people from long-term flood vulnerability. In addition to meeting the needs of disaster relief victims, these programs can be effective in achieving the nation's environmental goals. Environmental enhancement and mitigation programs essential to ecosystem management are often part of federal development projects. In the past, though, such programs have been delayed, underfunded, or not funded at all. Had they been implemented before the 1993 flood, these programs would have restored natural lands and provided a measure of flood protection through reduced runoff and increased floodwater storage.

- Action 7.1: The administration should establish a lead agency for coordinating acquisition of title and easements to lands acquired for environmental purposes. The report goes on to say, "Because the mission of the

FWS within the DOI, the Committee suggests that the DOI coordinate federal acquisitions of environmental lands.

- Recommendation 10.2: The USACE should consider land acquisition as an alternative during planning and design of habitat rehabilitation and enhancement projects under the Environmental Management Program (EMP)

The Floodplain Management Assessment of the Upper Mississippi and Lower Missouri Rivers and their tributaries (FPMA)

The Great Midwest Flood of 1193 generated Congressional authorization and appropriations for the Corps of Engineers to conduct a comprehensive, system-wide study to assess flood control and floodplain management along these river corridors.

Probably the most notable work on this subject by others is the report commonly referred to as the "Galloway Report", described above. The FPMA attempted to complement the findings and recommendations contained in that report for which the Corps has authorities and expertise. The FPMA focuses on a comparison of impacts and costs of implementing a wide array of alternative policies, programs, and structural and nonstructural measures by assuming they had been in place during the flood. It explores three scenarios of change in flood insurance, State and local floodplain regulation, flood hazard mitigation and disaster assistance, wetland restoration, and agricultural support policies. The structural alternatives ranged from levees high enough to contain the 1993 flood event to totally removing the levee systems, with several intermediate alternatives. The Fish and Wildlife Service and other State and Federal partners participated in this process.

Among many conclusions the report recommends a reduction of agriculture in the most flood prone areas, expanding the flood storage capacity in some areas, and restoring wetlands as an "alternate" land use in increasing floodplain health and function.

Upper Mississippi River System Habitat Needs Assessment - 2000

The primary objectives of this initial Habitat Needs Assessment (HNA) are the evaluation of existing habitat conditions throughout the UMRS, forecasting future conditions, and quantifying ecological sustaining and socially desired future habitat conditions. The HNA addresses the system-wide, river reach, and pool levels of spatial scale and includes the bluff to bluff extent of the floodplain.

The HNA used 18 land use/land cover classes to represent habitat types along the corridor. Each individual type was quantified and predictions were developed, based on river geomorphic processes, about the amount of change for each type. Consultations were held with river resource managers and the public to help define a desired future condition. These sessions were based on information provided on historic conditions, existing conditions, the available forecast of future conditions as provided by models, and information about the geomorphic processes influencing river conditions. A loss of diversity is a major concern. Bathymetry is becoming more homogenized as deep holes become filled in while islands are eroding away. For the Mark Twain reach of the river the HNA summary needs are:

Lower Impounded Reach Needs (Pools 14-26)

- Reduce main channel habitat by 1,800 acres
- Create or restore: 9,000 acres of secondary channel habitat; 10,500 acres of contiguous backwater habitat; 5,000 acres of isolated backwater habitat; and 3,000 acres of island habitat.

Open River Reach Needs (Middle Mississippi River)

- Create or restore 25,000 acres of backwater and secondary channel habitat, of which 7,000 acres should be isolated backwaters
- Increase the amount of prairie, marsh and forest by about 100,000 acres
- Restore geomorphic processes that create and maintain sand bars and shoals

Special Land Use Designations

Wilderness Review

Lands within the existing and proposed boundaries of each unit of the Mark Twain National Wildlife Refuge Complex were evaluated for wilderness suitability as part of this planning process. No lands were found suitable for designation as wilderness as defined in the Wilderness Act of 1964. The Refuge Complex AEC does not contain 5,000 contiguous, roadless acres nor does the Complex have any units of sufficient size to make their preservation practicable as wilderness. The lands of the refuge have been substantially affected by humans, particularly through agriculture and the navigation system.

Other Special Land Designations

As a part of the planning process, other land designations potentially appropriate to the National Wildlife Refuge System were evaluated. Public Use Natural Areas, Research Natural Areas, Wild and Scenic Rivers and RAMSAR (Convention on Wetlands, signed in Ramsar, Iran in 1971) designations have been considered and none are proposed at this time. Due to the same factors influencing wilderness considerations mentioned previously, as well as the scattered nature of the divisions within each refuge, it is thought that refuge management under the guidance of the 1997 Refuge Improvement Act is sufficient for meeting the goals and objectives of the project. The American Bird Conservancy has designated Mark Twain Complex refuges as Important Bird Areas (IBAs).

Cooperative Agreement with COE for General Plan (GP) Lands

The Cooperative Agreement addresses Service management of COE GP lands. It defines the privileges granted to the Service for refuge overlay areas, as well as some of the authorities reserved by the COE. At the start of this CCP planning process the existing agreement, which covered all lands owned by the COE within the Mark Twain Complex, the Upper Mississippi River National Wildlife and Fish Refuge and state managed areas, was signed into place in 1963. (See Section on History and Establishment of Mark Twain NWR). Certain provisions of the agreement had long been recognized by both Service and COE personnel as deficient. However, the fact that the agreement area covered two refuges, three COE Districts, two COE Divisions and three states always seemed to stall any attempts to revise the document. In late 1997 the COE implemented a reorganization that put all three of the UMR Districts under the Mississippi Valley Division in Vicksburg, Mississippi. This streamlined the COE involvement and provided an opportunity to address the document's problems at

the same time the refuge was beginning this CCP process. A revised agreement was finalized in the summer of 2001. Highlights of the revision include:

- Added an introduction on the Corp's overall role and the existence of other interagency involvement.
- Deleted several elements on commercial development and reserved private rights.
- Clarified boundary management and trespass issues.
- Removed the restriction on converting farm lands to other habitat uses.
- Changed the extensive annual reporting requirement.
- Added element to clarify COE "harvest and selling of merchantable timber."
- Added a dispute resolution process.

The 2001 revised Cooperative Agreement between the COE and Service relating to GP lands and refuge management is attached as Appendix E.

Other Interagency Coordination

Spill Response

Response to oil or hazardous substance spills is a coordinated effort between local, state, and federal authorities. Spills on the UMR have the potential to affect people and natural resources far downstream of the original incident, so quick coordination and response by all parties is essential to minimize the damage from hazardous substance spills.

In response to this need, the *Upper Mississippi Spill Response Plan and Resource Manual* was developed in a cooperative effort of the five states bordering the upper River, the U.S. EPA, the U.S. Coast Guard, USFWS, and the Upper Mississippi River Basin Association (UMRBA). The manual addresses some of the unique circumstances that may arise in coordinating spill response on the Mississippi River and includes emergency telephone numbers for all agencies that may be involved in initial spill response efforts.

When a spill occurs, state authorities are responsible for assuring that an investigation is initiated to determine the severity of the spill. It is also the responsibility of the state to notify other potentially-affected states and the appropriate federal response and natural resource agencies. The level of response necessary is determined by considering such factors as size and location of the spill, type of material spilled, damage potential, cost of clean-up versus effectiveness expected, and media/political interest.

When a federal response is deemed necessary, the Coast Guard and EPA share the responsibility as predesignated federal on-scene coordinators (FOSC) for the UMR. Per EPA/Coast Guard memorandums of understanding, the Coast Guard serves as FOSC for all incidents involving commercial vessels or marine transportation related facilities. In all other federal responses, the EPA serves as the FOSC.

The Service's primary role in responding to spills is to provide technical assistance to the coordinating agency, incident commander, or on-scene coordinator to minimize adverse effects to fish, wildlife, and other trust resources. A field response coordinator has been designated for each Service facility to provide initial on-site response when necessary. For Mark Twain NWR Complex, the coordinator is the Wildlife Biologist in the Quincy office.

Refuge staff may be asked to provide their expertise and assistance to spill response personnel. This may include, but is not limited to, advising as to resources at risk from the spill, advising on River conditions and possible access points, hazing waterfowl and other wildlife from areas known or likely to be impacted, and coordinating oiled wildlife collection and rehabilitation efforts. Only properly trained Service personnel can participate in spill response and clean up activities. The Region 3 Oil Spill Response Plan identifies minimum training requirements for all participating personnel.

In addition, each refuge may need to have its own Spill Prevention, Control and Countermeasures (SPCC) Plan on file. According to the Federal Register for all agencies, 40 CFR 112, a plan is required for any facility where all three of the following conditions are met:

- The facility is non-transportation related.
- The above-ground storage capacity of any single container is in excess of 660 gallons, or the aggregate above-ground storage capacity is greater than 1,320 gallons, or the total underground storage capacity is greater than 42,000 gallons.
- Due to its location, oil spilled at the facility could reasonably be expected to reach waters of the United States.

Spill Prevention and Control, Control and Countermeasures Plans are designed primarily to prevent any discharge of oil and oil products from the refuge, but also to address control and clean-up measures in case of an accidental spill. More specific information on plan development can be found in 40 CFR 112 and the Service document "*Guidance for SPCC Plans*" prepared by the Service Pollution Control Office in Denver.

Channel Maintenance and Dredge Disposal

Maintenance of the 9-foot navigation channel on the UMR requires maintenance of channel training structures and dredging in areas of sand deposition by keeping scouring flows directed to the main channel. Wing dams and closing dams were constructed with the intent of reducing the need for dredging. Also, banks along the channel have been protected with revetment where necessary to maintain channel position. Continuous adjustments and repairs to these control structures are necessary to maintain their hydraulic effectiveness. Each of these actions has an effect on riverine habitat for fish and wildlife. For this reason the Refuge Complex is working with the Ecological Services Offices in Rock Island and Marion, the COE, and the States to address this program throughout the AEC.

Erosion accounts for a major portion of the coarse material sedimentation problems and subsequent dredging requirements, but even optimum control of upland erosion would not eliminate dredging needs. Other factors also influence

the amount of material dredged in a given location such as: channel width and depth, water flow and current patterns. Due to the influence of these hydraulic factors, certain portions of the River are more prone to deposition than others. Specific dredging locations and quantities vary annually due to continually changing flows, but many areas in the AEC have a number of chronic dredging sites. All material dredged from the River must have a disposal site on land and/or water. Where and how dredged material is placed can influence the potential for impacts on water quality, fish and wildlife habitat, side channel conditions, flood levels, cultural resources, and recreation. Dredged material historically has been placed in close proximity to the dredging site along the shoreline, on inland sites, or in open water since placement near the dredge site is generally the least expensive alternative.

In 1974, the Great River Environmental Action Team (GREAT) was authorized by Congress to "investigate and study" a realistic River resource management plan that would provide for multiple-use management of the UMR. The GREAT studies (GREAT I in St. Paul District, GREAT II in Rock Island District, and GREAT III in St. Louis District) identified potential placement locations along the UMR that would minimize adverse environmental impacts. Within the Rock Island District, several coordinating groups were formed following the GREAT II recommendations. The River Resources Coordinating Team (RRCT) provides a mechanism for all federal and state agencies with management or regulatory responsibilities in the Rock Island District area to coordinate their programs and activities. Three coordinating groups report to the RRCT. The Fish and Wildlife Interagency Committee (FWIC) provides coordination regarding dredging impacts on fish and wildlife, dredged material disposal, River and backwater modifications, habitat restoration projects, and River management studies and investigations. The FWIC is composed of fish and wildlife biologists from the Missouri, Illinois, Iowa, Wisconsin, Minnesota, FWS, and COE. The inter-agency On-Site Inspection Team (OSIT) was developed to more effectively deal with site-specific dredged material problems. The OSIT reviews each proposed site in the field and makes recommendations pertaining to the placement of dredged material, so as to minimize any impacts on backwaters, wetlands, and other sensitive habitats. The Committee to Assess Regulatory Structures (CARS) recommends repair and modification of channel training structures with the objective of reducing dredging needs.

The St. Louis District developed the Great River Resource Management Study (GRRM) under GREAT III. Its recommendations included: continuing existing dredging coordination activities; initiating a program to modify, design, and evaluate channel training structures to benefit aquatic resources on the Middle Mississippi; and conducting additional studies on fish/wildlife habitat and sediment transport. Currently, interagency coordination in the St. Louis District includes an annual channel inspection boat trip to discuss channel maintenance and habitat restoration issues. The District and its partners have recently established a more formal River Resources Advisory Team (RRAT) as a forum for interagency coordination and for long-term continuity.

Each station on the Mark Twain Complex has been involved with these groups as appropriate. The Complex Office assumes the lead to represent refuge interests, and occasionally Service interests, in these forums throughout the AEC.

U.S. Department of Agriculture

U.S. Fish and Wildlife Service employees provide biological technical assistance to U.S. Department of Agriculture (USDA) agencies for implementation of key conservation programs of the Farm Bill. The Service's assistance helps USDA meet the technical challenges presented by these programs while maximizing benefits to fish and wildlife resources. The Service also assists in on-the-ground habitat restoration actions associated with several of these programs, including the Wetlands Reserve Program (WRP) and Conservation Reserve Program (CRP), administered by the Natural Resources Conservation Service (NRCS), and Farm Service Agency's (FSA) Farm Credit Programs.[10]

Natural Resources Conservation Service

Under the Wetlands Reserve Program, conservation easements are acquired that restore and protect degraded agricultural wetlands. Service employees provide technical assistance to USDA and private landowners on site selection, restoration planning and compatible uses for easements. Four divisions of the Mark Twain Refuge were acquired through a WRP provision, namely the Emergency Wetland Reserve Program. The Conservation Reserve Program (CRP) provides substantial benefits to fish and wildlife resources by temporarily retiring up to 40 million acres of environmentally sensitive cropland nationwide. Refuge employees provide technical assistance in order to maximize the wildlife values of enrolled lands. The Service may also provide direct assistance to landowners to further enhance wildlife benefits beyond those achievable by CRP on its own.

The Service assists USDA and landowners in implementing the wetland conservation provision of the Farm Bill known as Swampbuster. This provision makes eligibility for receiving USDA program benefits conditional on wetlands stewardship. The Service provides technical assistance to USDA on wetland identification, assessment of wetland functions relative to minimal effects and mitigation exemptions, and wetland restoration planning. Prior to the 1996 Farm Bill, USDA was required to consult with the Service by statute; however, under the 1996 amendments, this consultation is discretionary on the part of USDA.

Farm Service Agency (FSA)

The Service provides technical assistance to the FSA's Farm Credit Programs in the implementation of three of FSA conservation programs. Two of these elements are related to disposal of property obtained through loan failure. Service employees review inventory properties and make recommendations on: 1) the establishment of permanent conservation easements for the protection and restoration of wetlands and the conservation of other important natural resources; and, 2) the fee title transfer of inventory properties to State or Federal agencies for conservation purposes. A third area in which the Service occasionally provides technical assistance involves private property owned by FSA borrowers. The Service can assist in evaluating natural resource values of property and make recommendations for conservation contracts where FSA borrowers voluntarily set aside land for conservation purposes in exchange for partial debt cancellation.

[10] Additional information on easements and FSA properties managed by the Mark Twain NWR staff is found in the CCP Refuge Management Considerations section, under "Refuge Lands Associated with Farm Services Agency."